

REMARKS

Claims 1-7 are pending in the present application and stand ready for further action on the merits.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Claim Rejection under 35 U.S.C. § 103

Claims 1-3 and 5-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki US'369** (US 6,337,369) in view of **Albert et al. US'561** (US 3,254,561) and in further view of **Dempo US'178** (US 5,512,178).

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki US'369** in view of **Albert et al. US'561** in view of **Dempo US'178** and in further view of **Tsuchimoto et al. US'939** (US 2003/0197939).

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over **Isozaki US'369** in view of **Albert et al. US'561**, in view of **Dempo US'178** and in further view of **Isozaki et al. US'960** (US 2004/0089960).

Reconsideration and withdrawal of each of the above outstanding rejections are respectfully requested based on the following considerations.

Legal Standard for Determining Prima Facie Obviousness

M.P.E.P. § 2141 sets forth the guidelines in determining obviousness. First, the USPTO has to take into account the factual inquiries set forth in *Graham v. John Deere*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), which has provided the controlling framework for an obviousness analysis. The four *Graham* factors are:

- (a) determining the scope and content of the prior art;
- (b) ascertaining the differences between the prior art and the claims in issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating any evidence of secondary considerations.

Graham v. John Deere, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

Second, the USPTO has to provide some rationale for determining obviousness. MPEP § 2143 sets forth some rationales that were established in the recent decision of *KSR International Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). Exemplary rationales that may support a conclusion of obviousness include:

- (a) *combining prior art elements according to known methods to yield predictable results;*
- (b) *simple substitution of one known element for another to obtain predictable results;*
- (c) *use of known technique to improve similar devices (methods, or products) in the same way;*
- (d) *applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;*
- (e) *“obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success*
- (f) *known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;*
- (g) *some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.*

As the M.P.E.P. directs, all claim limitations must be considered in view of the cited prior art in order to establish a *prima facie* case of obviousness. See M.P.E.P. § 2143.03.

Present Invention

In the method for producing a polarizing film according to the present invention, a polyvinyl alcohol film in/on which iodine is adsorbed and oriented in an aqueous solution containing boric acid is dipped and retained with the aqueous solution. This method is characterized in that an absorbance of the aqueous solution at a wavelength of 450 nm is maintained in a range of 0.13 or less. This method can easily provide a polarizing film having better contrast than conventional polarizing films.

For the USPTO's ease of review, instantly pending independent claim 1 of the application is reproduced below:

1. A method for producing a polarizing film comprising the step of supplying a polyvinyl alcohol film in/on which iodine is adsorbed and oriented in an aqueous solution containing boric acid and dipping and treating said polyvinyl alcohol film with said aqueous solution, wherein an absorbance of said aqueous solution at a wavelength of 450 nm is maintained in a range of 0.13 or less.

Distinctions over the Cited Art

Isozaki US'369 discloses a method for producing a polarizing film and describes, in the Examples, the concentrations of boric acid, potassium iodide and zinc chloride in an aqueous solution, the treating temperature (30°C) of a film in the aqueous solution and a treating time (5 minutes dipping). However, **Isozaki US'369** does not describe any absorbance of an aqueous solution containing boric acid at a wavelength of 450 nm and does not suggest maintaining such an absorbance to a specific value or less.

Albert et al. US'561 discloses a process for polarizing ultraviolet light using a UV-polarizing film having a polarizing property in a UV region. **Albert et al. US'561** describes the addition of a reagent for reducing iodine to iodide such as sodium thiosulfate to improve dichroism in a UV wavelength range (260 to 400 nm). Thus, the technical field of the polarizing film of **Albert et al. US'561** is different from that of the present invention. Further, **Albert et al. US'561** does not describe any absorbance of an aqueous solution containing boric acid at a wavelength of 450 nm and does not suggest maintaining such an absorbance to a specific value or less.

Dempo US'178 discloses a water treatment method and an apparatus therefor. Thus, the technical field of the invention of **Dempo US'178** is entirely different from that of the present invention.

Response to the USPTO's allegations

At page 3, line 19 to page 4, line 5 of the Office Action dated September 23, 2010, the USPTO alleges as follows:

Because, in **Albert**, it is shown that improvements were shown in the dichorism and transmittances are noted throughout the 260-400 millimicron region (col. 3, lines 15-25), in preparing polarizer having film of polyvinyl alcohol (col. 3, lines 1-10), examiner note that it would have been obvious to modify method of producing polarizing film as taught in **Isozaki** by adjusting the transmittance and wavelength which are related to improvement in the final product, as taught in **Albert**, for the benefit of having improved efficiency, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPO 215 (CCPA 1980).

However, as described above, the method of the present invention maintains the absorbance of the aqueous solution, in which the polyvinyl alcohol film is dipped, at a wavelength of 450 nm to 0.13 or less in order to provide a polarizing film having improved contrast. The present invention does not intend to improve dichroism or transmittance in a wavelength range of from 260 to 400 millimicrons, which is a UV region. **Albert et al. US'561** does not describe or teach the improvement of contrast.

When the contrast of the polarizing film produced in the Examples of **Albert et al. US'561** is calculated, it is found that the polarizing films of **Albert et al. US'561** have insufficient contrast.

For the USPTO's consideration, the contrast of the polarizing film produced in the Examples according to the present invention is compared with the contrast of the polarizing film produced in Example 1 of **Albert et al. US'561**.

More particularly, the calculated contrast of the polarizing film produced in Example 1 of **Albert et al. US'561** is reported in **Table A** (*see below*) together with the contrasts of the polarizing films produced in Examples 1, 2 and 3 and Comparative Examples 1 and 2 described in the present specification.

Accordingly, the polarizing films produced by the method of the present invention have a higher contrast than the film produced by **Albert et al. US'561**. It is hardly expected that a polarizing film could be arrived at having such a high contrast, even when the inventions of **Albert et al. US'561** and **Isozaki US'369** are considered in combination.

Table A

	Transmittance Ts (%)	Contrast ¹⁾	Dichroic Ratio	Absorbance of Aqueous Solution of Boric Acid	
Example 1 (invention)	43.9	2047	---	0.05	Visible region
Example 2 (invention)	44.0	1773	---	0.08	Visible region
Example 3 (invention)	43.7	3827	---	0.04	Visible region
Comparative Example 1	43.7	696	---	0.2	Visible region
Comparative Example 2	43.8	689	---	0.15	Visible region
Example 1 of Albert et al. US'561	26 - 32	53	11.4	---	360 nm

¹⁾ A contrast is calculated from a dichroic ratio and a transmittance using the following equations:

$$\text{Dichroic ratio (D)} = \log k_2 / \log k_1$$

$$\text{Transmittance (Ts)} = (k_1 + k_2) / 2$$

$$\text{Contrast (Cr)} = (k_1^2 + k_2^2) / (2 \times k_1 \times k_2)$$

in which k_1 is a transmittance in the direction of a transmission axis and k_2 is a transmittance in the direction of an absorption axis ($k_1 > k_2$).

Consequently, it is submitted that the present invention as recited in pending claims 1-7 would not have been obvious from **Isozaki US'369** in view of **Albert et al. US'561**.

At page 4, line 6 to page 5, line 6 of the Office Action dated September 23, 2010, the USPTO alleges as follows:

Furthermore, one ordinary skill in the art knows that there are other ways of removing iodine from the boric acid solution, in order to obtain specific transmittance, such as by chemical or physical or electrochemical technique.

In the same field of endeavor, treating aqueous solution to remove any oxidizing agent, Dempo teaches that an activated carbon filter can be used to remove oxidizing substances from an aqueous solution (col. 3, lines 34-38). In this case the oxidizing component is the iodine of Isozaki.

Because Isozaki et al. uses technique such as dipping stretched film containing iodide as shown above, it is inherent that iodide will also dissolve in the solution and produce color. Therefore, it would have been obvious to one ordinary skill in the art at the time of the applicant's invention to modify method of producing polarizing film as taught in Isozaki, with removing iodine which results in specific wavelength, as taught in Albert, and further using a carbon activated filter taught, in Dempo for the benefit of removing iodine.

Furthermore, since Albert shows providing ultraviolet light (at ultraviolet region) through the final product which is the film, it is noted that similar effect may be resulted by providing ultraviolet light through the film in the solution, since solution is applied on the film as the last/final step. Because wavelength and transmittance of either the film, or the content of iodine in the solution of boric acid, are important factor for improvement in producing a polarizer film, as taught above by Albert, thus the

combination and optimization using activated carbon Dempo, above produces a solution having desired wavelength and absorbance which are in the claimed ranges, and further resulting in specific contrast in the film.

In response to the USPTO's above assertion, it is agreed that **Dempo US'178** discloses the use of activated carbon in a filtering unit for treating water. However, **Dempo US'178** never describes any aqueous solution containing boric acid which is used in the production of a polarizing film. Further, **Dempo US'178** does not describe or suggest the use of activated carbon in treating an aqueous solution containing boric acid which is used in a production method of a polarizing film.

At page 10, line 6 to page 13, line 3 of the Office Action dated September 23, 2010, the USPTO remarks on the Inventors' earlier response submitted in support of patentability. In reply to such remarks of the USPTO, the following factors are presented for the USPTO's consideration.

Even if it would have been known to control the concentration of boric acid to improve the transmittance of a polarizing film or it would have been a common technique to use a reagent for reducing boric acid or activated carbon to control the concentration of boric acid, the present invention does not intend to improve a transmittance of a polarizing film by controlling the concentration of boric acid, *but instead*, the present invention improves the contrast of a polarizing film by doing so (*i.e.*, by controlling the concentration of boric acid).

Prior to the present invention, no technique was known to improve the contrast of a polarizing film while maintaining a transmittance constant, and the polarizing film produced by the method of the present invention has far better contrast than conventional polarizing films.

Consequently, is submitted that the present invention as instantly claimed would not have been obvious from **Isozaki US'369** in view of **Albert et al. US'561** and in further view of **Dempo US'178**. Any contentions on the USPTO's part to the contrary are respectfully requested to be reconsidered at present.

Double Patenting Rejection – Provisional Nonstatutory Obviousness-Type

Claims 1-7 have been *provisionally* rejected for Nonstatutory Obviousness-Type Double Patenting over claims 1-6 and 8-10 of Application No. 10/538,079. In accordance with the provisions of MPEP §804 I. B. 1, the Examiner is requested to employ the following procedure:

If a "provisional" nonstatutory obviousness-type double patenting (ODP) rejection is the only rejection remaining in the earlier filed of the two pending applications, while the later-filed application is rejectable on other grounds, the examiner should withdraw that rejection and permit the earlier-filed application to issue as a patent without a terminal disclaimer....

If "provisional" ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer.... If both applications are filed on the same day, the examiner should determine which application claims the base invention and which application claims the improvement (added limitations). The ODP rejection in the base application can be withdrawn without a terminal disclaimer....

Alternatively, the Examiner is respectfully requested to hold the provisional rejection in abeyance until allowable subject matter is indicated.

Conclusion

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims 1-7 is allowable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey, Reg. No. 32,881 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

By 

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